



**-OPERATING INSTRUCTIONS-  
MODEL B-310, B310S & B142  
CONTOUR PROBES**

**BULLETIN 205-B  
FEB 2009**

**PARKER RESEARCH CORP.**

NONDESTRUCTIVE TEST METHODS, SYSTEMS, INSTRUMENTS  
BOX 1406, DUNEDIN, FLORIDA, U.S.A. 34697  
PHONE: (727)796-4066 TELEFAX: 1 (727)797-3941


The B310, B310S and B142 Contour Probes are rugged high performance instruments for Magnetic Particle inspection to accepted Non-Destructive testing standards. Certain operating procedures and safety precautions should be observed.

**ELECTRICAL:** The B310 Contour Probe is designed to operate from a standard 115VAC, 60Hz, 1P, grounded power source. The model B310S is designed to operate from a 230VAC, 50-60Hz, 1P, grounded power source. The model B142 is designed to operate from a low voltage (42VAC) power source or power supply. Both the B310 and B310S may be operated from the optional DC300 or DC300S power supply.

Repairs should not be attempted on these units. Units are sealed and should be returned to the factory for service.

The instrument should be wiped clean with a general purpose cleaner after use.

The model B310S and B142 are sold without an electrical power plug. Only approved plugs should be installed by certified personnel.

 **Duty Cycle:** Two minutes "On", Two minutes "Off"

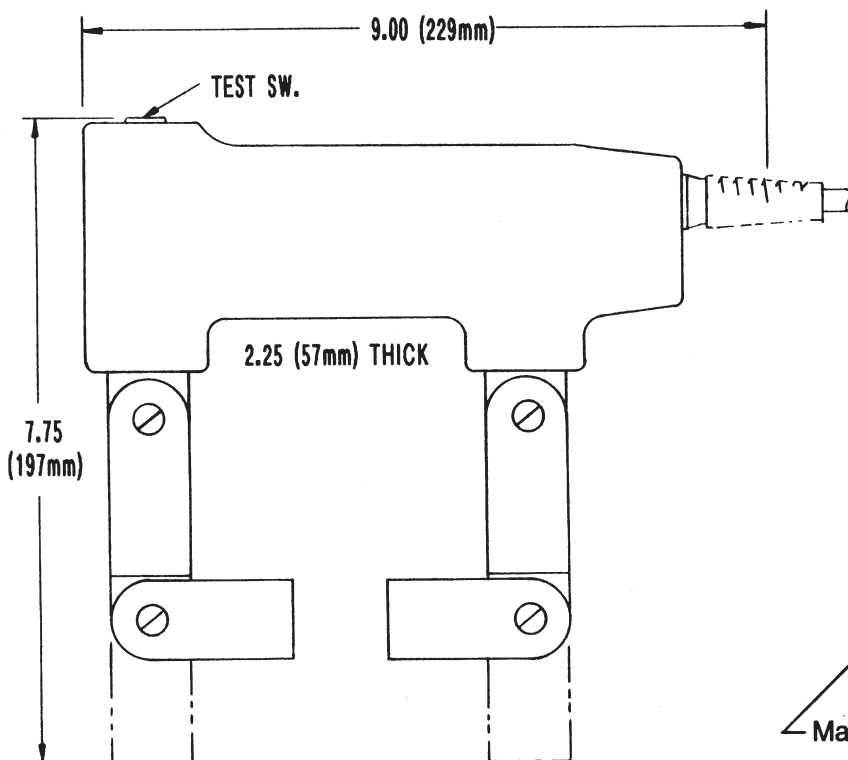


FIG. 1

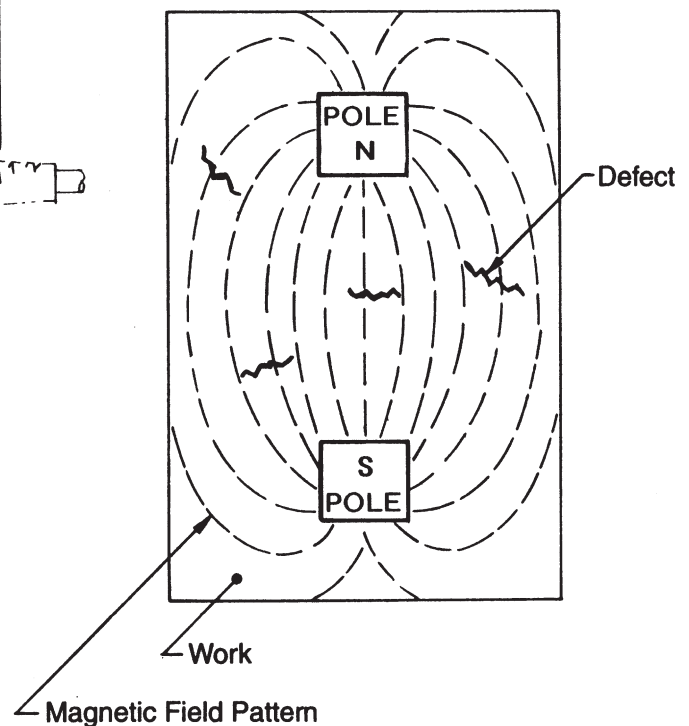


FIG. 2

**INSTRUMENT DESCRIPTION:** Basically the B310 Contour Probe is an electromagnet producing a strong AC magnetic field. Placement of the two poles (legs) upon ferrous materials merely provides a path for the intense magnetic field to pass from one pole to the other. The part completes the flux path and becomes highly magnetized.

In overall design and performance, the Contour Probe comprises a coil wound on a laminated steel leg assembly contained within the rugged molded housing. Flexibility of the legs allows the field to actually be “focused” at the precise area of inspection.

The exclusive, reversible strain relief feature permits the B310 to be used in very confined areas. The strain relief may be rotated to exit at the top of the unit (figure 3) or conventionally, at the end (figure 4). With the B310 disconnected from the power source, simply remove the four phillips-head screws holding the strain relief plate. Rotate the plate/strain relief assembly around being careful not to twist the wires more than once in either direction. Replace the plate assembly taking care that the wires do not become pinched. Replace the four screws.

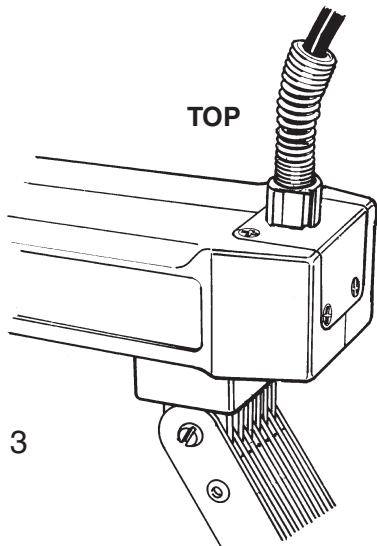


FIG. 3

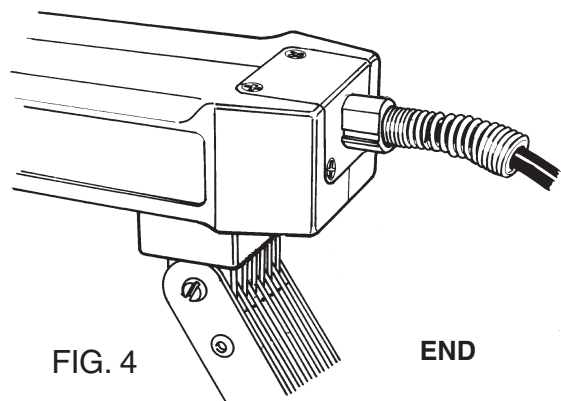


FIG. 4

**OPERATION:** Plug the Contour Probe into a Grounded power source. Place the Probe legs upon the work surface with the suspected defect at right angles to the legs. Push the test switch and lightly dust or float inspection powder over the area being inspected. Defect indications will be revealed in a direction shown on figure 1. Turn the Probe 90 degrees from the first test and repeat the procedure. Test switch should be released after powder application. However, if excess powder is to be lightly blown away, as is the procedure to reveal minute indications, the Probe should remain energized while this procedure is performed.

**DEMAGNETIZATION:** Small pieces which have become magnetized, may be easily demagnetized by the following procedure. Energize the Probe and pass small parts through the area between the pole ends “feet” and withdraw to a distance of about two feet. On large pieces, place the Probe in the same position as inspection, energize and lift from the work surface to a distance of about two feet. This procedure may need to be repeated more than once to remove the residual field.

**USE OF AC AND DC FIELDS:** The following is a brief outline of the advantages and limitations of the two magnetic fields. Familiarization will greatly increase the utilization of your Probe and the reliability of your inspection work.

**AC MAGNETIZATION:** An AC field induced into a part is a skin or surface field and does not penetrate the cross section of the material. A bi-product of AC is in the form of eddy currents which tend to guide or direct the magnetic field in a basically narrow pattern between the poles. Another bi-product is a vibratory action which adds mobility to the inspection particles to form a highly defined powder build-up at the defect. For these reasons, an AC field is the most desirable for the detection of surface or surface breaking defects.

**USE OF THE OPTIONAL PULSED DC POWER SUPPLY:** The DC-300 power supply provides a strong DC magnetic field described below. The DC-300 contains an electronic circuitboard completely sealed within the housing. As directed by the markings on the power supply, the Probe should be connected to the output power cord, while the input plug of the power supply should be connected to a Grounded power source. **CAUTION:** The DC-300 is designed to be used with the B100, B300 and B310 series Contour Probes only. **They should not be used for operating any other electrical instruments.**

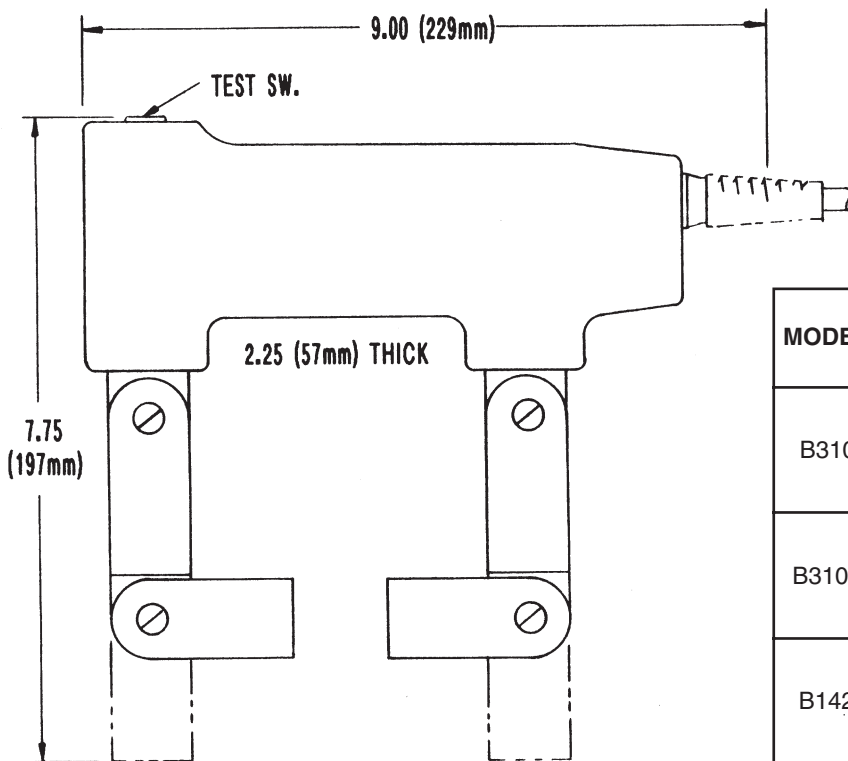
**PULSED DC MAGNETIZATION:** A DC field induced into a small work piece penetrates a larger cross section of the part and is inclined to spread out on each side of the line between the poles. The field energy is dispersed over a greater area. Thus, DC provides greater penetration for the detection of near-surface defects in small parts.

**CAUTION:** Often, on small parts, it is possible that an excessive amount of field will saturate the part and cause a masking effect to the point where it is impossible to define a defect.

**Operating Environment:** Temperature: 32° to 104°F (0° to 40°C). Relative humidity: 10% to 95%, non-condensing.

**Shipping and Storage Environment:** Temperature: -40° to 140°F (-40° to 60°C). Relative humidity: 5% to 95%. Vibration and shock: As encountered in normal shipping and handling with no degradation.

### SPECIFICATIONS



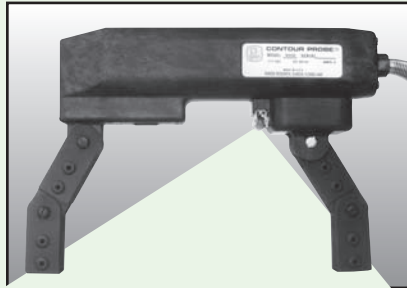
MODEL	POWER REQUIREMENTS	FIELD	NET WEIGHT
B310	117 VAC $\pm$ 10% 47-63 Hz 4 AMPS	AC ONLY	6 lb (2.7 kg)
B310S	230 VAC $\pm$ 10% 47-63 Hz 2 AMPS	AC ONLY	6 lb (2.7 kg)
B142	42 VAC $\pm$ 10% 47-63 Hz 7.5 AMPS	AC ONLY	6 lb (2.7 kg)

# PARKER

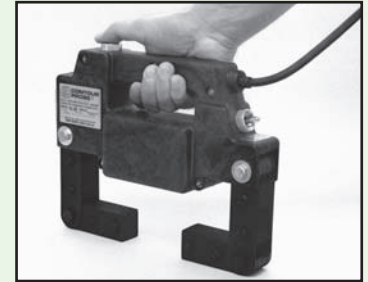
## MAGNETIC PARTICLE INSPECTION INSTRUMENTS



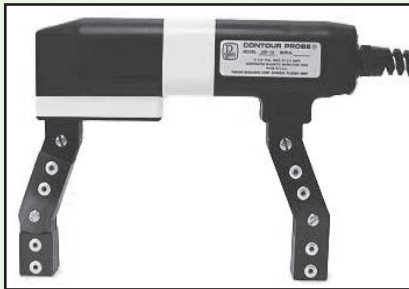
DA400 - Contour Probe. Most popular A.C./D.C. Yoke. Available in various Kit forms. Y400 Yoke Light additional.



B300 - A.C. Contour Probe. Available with Y300 Yoke Light. Also available with GFI Plug.



DA210 - Heavy Duty A.C. Contour Probe. Strongest A.C. Field Yoke available. Model DA200 available for A.C./D.C. Operation.



UW115 & UW12 Underwater A.C. and D.C. Yokes.



PL8 & PL10 - Magnetizing Coils. 8" & 10" I.D. Complete with Carrying Case.



BAC310 - Portable, Stand alone Battery Inverted 115VAC Power Supply. Operate A.C. Yokes or other Instruments where normal power sources are unavailable.



DA750 & DA1500 - Portable Mag units. Heavy duty 750 or 1500 AMP. Available with all accessories.



B100 - Our most economical A.C. Contour Probe. Available in 115VAC and 230VAC. May be ordered with the Y400 Yoke Light at extra cost.



DA-400 Shown With "A" Kit items. Kit items are available with dry powder and Wet Fluorescent inspection mediums. Including Black Light and Steel Carrying Case.



WEB SITE: <http://www.parkerndt.com>

**1-800-525-3935**

**PARKER RESEARCH CORP.**

P.O. BOX 1406, DUNEDIN, FLORIDA 34697 USA

Phone: (727) 796-4066, Fax: (727) 797-3941, E-MAIL: [sales@parkerndt.com](mailto:sales@parkerndt.com)